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## HELMET

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### Field of the Invention

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6       The present invention relates to protective headgear.

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8

### Background of the Invention

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10       The prior art is replete with helmets, which are worn  
11       as protective headgear during the operation of a vehicle.  
12       In general, helmets are of two basic types. One type,  
13       commonly referred to as "jet-type", covers the head of the  
14       wearer while exposing the face of the wearer. The other  
15       type, conventionally referred to as "full face", includes a  
16       chin shield for protecting the lower portion of the face of  
17       the wearer.

18

19       Two species of full-face helmets are known. In  
20       accordance with one species, the chin shield is integrally  
21       formed with the head protecting body or shell. In the  
22       other species, the chin shield is mounted upon the shell  
23       for vertical movement between a lowered position and a  
24       raised position. In the lowered position, the chin shield

1 extends across the mandibular portion of the face. In the  
2 raised position, the chin shield resides above and  
3 straddling the shell.

4

5 The latter specie of full-face helmet actually  
6 performs as a full-face helmet when the chin shield is in  
7 the lowered position and as a jet-type helmet when the chin  
8 shield is in the raised position. A dual-purpose helmet  
9 that selectively functions as a full-face helmet or a jet-  
10 type helmet is highly desirable. For example, many  
11 vehicles, such as bicycles and skateboards, are ridden for  
12 pleasure in minimal risk environments. During such  
13 operation a jet-type helmet is desirable; the chin shield  
14 in the lowered position being considered an inconvenience  
15 and unwanted obstruction. When vehicles are ridden in  
16 perilous environments or in competition, the chin shield is  
17 highly desirable.

18

19 The prior art has provided numerous specific  
20 configurations of dual-purpose helmets. None, however,  
21 have proven to be entirely satisfactory. Many incorporate  
22 substantially complex and relatively expensive mechanisms  
23 for raising and lowering the chin shield. Frequently, the  
24 prior art dual-purpose helmets are inconvenient to operate,

1 requiring a precise sequence of operations by the wearer,  
2 which may require removal of the helmet. It is also noted,  
3 that when in the raised position, the chin shield has no  
4 protective value. Further, the chin shield, in the raised  
5 position, resides above the shell thereby providing an  
6 obstruction to the normally smooth surface of the shell  
7 that can be snagged with attendant injury to the head and  
8 neck area of the wearer.

1

Summary of the Invention

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3       It would be highly advantageous, therefore, to remedy  
4   the foregoing and other deficiencies inherent in the prior  
5   art.

6

7       Accordingly, it is an object of the instant invention  
8   to provide a helmet having improved means for selectively  
9   functioning as a jet-type helmet or a full-face type  
10   helmet.

11

12       Another object of the present invention is the  
13  provision of a protective helmet having simplified means  
14  for moving the chin shield between the raised position and  
15  the lowered position.

16

17       And another object of this invention is to provide a  
18  helmet in which the chin shield can be readily manipulated  
19  with one hand of the wearer without removal from the head.

20

21       Still another object of the invention is the provision  
22  of a helmet having a movable chin guard that can be raised  
23  or lowered in a single step.

1        Yet another object of the present invention is to  
2 provide a full-face helmet in which the chin guard performs  
3 a protective function in the raised position and in the  
4 lowered position.

5

6        Yet still another object of the instant invention is  
7 the provision of a helmet having a movable shield having an  
8 outer surface, which in the raised position is integral  
9 with the helmet shell.

10

11        A further object of this invention is to provide a  
12 helmet having a movable shield that, in the raised  
13 position, leaves the outer surface of the shell  
14 unobstructed.

15        ;

16        A yet further object of the present invention is the  
17 provision of a helmet having a single means for holding the  
18 shield in the raised position and in the lowered position.

19

20        A still further object of this invention is to provide  
21 a helmet having a movable shield that can be simply and  
22 inexpensively manufactured with conventional helmet  
23 manufacturing methods.

1       A yet still further object of the invention is the  
2 provision of a movable shield that can be incorporated into  
3 a conventional jet-type helmet.

4

5       Briefly, to achieve the objects and advantages of the  
6 instant invention, in accordance with a preferred  
7 embodiment thereof, first provided is a protective helmet  
8 having a shell for receiving the head of a wearer and  
9 exposing the face, including the frontal area and the  
10 mandibular area of the face. The shell is constructed in  
11 accordance with conventional practice and standard  
12 manufacturing techniques.

13

14       The improvements of present invention include a shield  
15 is attached to the shell for movement between a raised  
16 position in which the shield spans the frontal area of the  
17 face and a lowered position in which the shield spans the  
18 mandibular area of the face.

19

20       It is within the teachings of the invention that the  
21 shell and the shield include outer surfaces that are  
22 substantially contiguous when the shield is in the raised  
23 position. Preferably, when in the raised position, the  
24 upper terminal edge of the shield abuts the forward

1 terminal edge of the shield. Detent means retain the  
2 shield in the lowered position and in the lowered position.  
3 The detent means may be in the form of a ball component and  
4 a strike component, one of the components being carried by  
5 the shield and the other of the components being carried by  
6 the shell. The detent may also include a hook and loop  
7 fastener; one of the elements being affixed to the upper  
8 terminal edge of the shield and the other of the elements  
9 be affixed to the forward terminal edge of the shell.

10

11 It is also within the scope of the invention that the  
12 shield include opposed, depending lateral sides which are  
13 pivotally connected to respective terminal ends of the  
14 shield. Latch means can be provided to releasably retain  
15 the shield in the raised position. A preferred latch means  
16 is in the form of interlocking engagement pair having a  
17 catch element and a strike element, one of the elements  
18 being carried by the shell and the other of the elements  
19 being carried by the shield.

20

21 In accordance with a preferred method of fabricating  
22 the helmet, a shell having an integral anterior portion is  
23 formed in accordance with conventional practice and using  
24 known materials. After the shell is formed, the anterior

1 portion is separated and subsequently joined to the shell  
2 for movement between a raised position and a lowered  
3 position. It is within the scope of the method that the  
4 shield be pivotally attached to the shell. Detent means  
5 may be provided for releasably retaining the shield in the  
6 raised position and in the lowered position.

7

8       It is completed that the upper edge of the shield abut  
9 the forward terminal edge of the shell when in the raised  
10 position. Preferably, when the shield is in the raised  
11 position, the outer surface of the shield is substantially  
12 contiguous with the outer surface of the shell. An  
13 engagement pair, one element of which is affixed proximate  
14 the upper edge of the shield and a complemental of which is  
15 affixed proximate the forward terminal edge of the shell  
16 functions to releasably retain the shield in the raised  
17 position.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Referring to the drawings:

Figure 1 is a perspective view of a protective helmet, constructed in accordance with the principles of the instant invention, as it would appear upon the head of a wearer, the helmet having a movable ballistic shield being raised position;

Figure 2 is a view generally similar to the view of Figure 1, the ballistic shield being in the lowered position;

Figure 3 is a front view taken from the view of Figure

Figure 4 is a front view taken from the view of Figure

Figure 5 is a side elevational view of the helmet as in Figure 2; a portion thereof being broken away for purposes of illustration:

1       Figure 6 is an enlarged fragmentary view taken from  
2       Figure 5 and especially detailing the connection between  
3       the helmet shell and the ballistic shield, the ballistic  
4       shield being in the lowered position;

5

6       Figure 7 is a view generally corresponding to the view  
7       of Figure 6, the ballistic shield being in the raised  
8       position;

9

10      Figure 8 is a perspective view of the helmet seen in  
11      Figure 2;

12

13      Figure 9 is a view generally corresponding to the view  
14      of Figure 1, and having latch means being shown in the  
15      engaged position;

16

17      Figure 10 is an enlarged fragmentary view taken from  
18      the view of Figure 9 and especially detailing a latch means  
19      useful in connection with the helmet of the present  
20      invention, the latch being in the engaged position; and

21

22      Figure 11 is a view generally corresponding to the  
23      view of Figure 10, the latch means being in the disengaged  
24      position.

1           DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

2

3           Turing now to the drawings, in which like reference  
4           character indicate corresponding elements throughout the  
5           several views, attention is first directed to Figure 1, is  
6           which is seen a helmet, embodying the principles of the  
7           instant invention and generally designated by the reference  
8           character 20, as it would appear when upon the head of a  
9           wearer, generally designated by the reference character 22.

10

11           For purposes of reference and understanding, head 22  
12          includes face 23 having mandibular area 24 and frontal area  
13          25, the latter being better seen in Fig. 2. Frontal area  
14          25 is commonly referred to as the forehead, while  
15          mandibular area 24 generally refers to the mouth and lower  
16          jaw area of the face.

17

18           Helmet 20 includes shell 27 which may be constructed  
19          of conventional materials and utilizing methods standard  
20          within the art. One such method includes fabricating the  
21          helmet of layers of fabric impregnated with phenolic resin  
22          such as that sold under the trademark Kevlar® or Nomex®.  
23          The several layers are laminated together with a laminating  
24          resin such as a catalyzed system of 50% phenol formaldehyde

1 and 50% butyral resins. Subsequently, the shell is lined  
2 with an inner pad assembly, such as foam rubber or plastic,  
3 which is overlain with leather or leather substitute. The  
4 shell with lining is sized and shaped to receive the head  
5 the user. The helmet is held in place upon the head by a  
6 conventional chin strap 28.

7

8 In accordance with the teachings of the instant  
9 invention, a ballistic shield 29 is secured to shell 27 as  
10 by as by rivets 30 for pivotal movement between a raised  
11 position for spanning and protecting the frontal area 25 as  
12 seen in Figures 1 and 3 and a lowered position for spanning  
13 and protecting the mandibular area 24 as seen in Figures 2  
14 and 4. It is contemplated that ballistic shield 29 is  
15 molded or fabricated with conventional materials in  
16 accordance with standard methods as set forth above.

17

18 Turning now to Figure 5, in which it is seen that  
19 shell 27 includes first and second spaced apart lateral  
20 sides 32 and 33, respectively. Second lateral side 33 is  
21 better seen in Figure 8. A plate 34 is affixed to the  
22 interior of lateral side 32 as by rivets 35 to project  
23 forwardly therefrom. A mirror image plate 37 is similarly  
24 affixed to the interior of lateral side 33. It is

1 understood that the plates 34 and 37 may be affixed to the  
2 respective lateral sides in accordance with other methods  
3 known to those skilled in the art, such as gluing.

4

5 With further reference to Figures 5 and 8, it is seen  
6 that ballistic shield 29 is generally "U" shaped having  
7 upper edge 38, lower edge 39 and first and second terminal  
8 ends 40 and 42, respectively. First terminal end 40 is  
9 pivotally connected to plate 34 as by a rivet 30. Second  
10 terminal end 42 is similarly pivotally connected to plate  
11 37 as by a rivet 30. Other means for effecting a pivotal  
12 attachment between ballistic shield 29 and shell 27, such  
13 as a hinge or ball and socket joint, will readily occur to  
14 those skilled in the art.

15

16 It is within the scope of the present invention to  
17 provide detent means for alternately retaining the  
18 ballistic shield in the raised position and in the lowered  
19 position. In accordance embodiment thereof, the detent  
20 means includes a ball element and a strike element.  
21 Referring specifically to Figures 5, 6 and 7 there is seen  
22 a tab 45 secured to inner lateral side 32 and projecting  
23 forwardly therefrom. Tab 45 is secured as by glue or other  
24 conventional means. One element 47 of the detent means is

1 carried by the tab, while the other element 48 is carried  
2 by the ballistic shield. Tab 45 is sufficiently resilient  
3 that the element 48 can pass to either side of element 47.  
4 With specific reference to Figure 8, it is seen that mirror  
5 image detent means 49 is carried at the second lateral side  
6 33.

7

8 With additional reference to Figure 8, there is seen  
9 an alternate detent means for retaining ballistic shield 29  
10 in the raised position. The immediate embodiment of the  
11 detent means is in the form of a hook and loop fastener,  
12 such as the one sold under the trademark Velcro®. One  
13 element 50 of the hook and loop fastener is secured to the  
14 upper edge 38 of ballistic shield 29. The other element 52  
15 of the hook and loop fastener is secured to the forward  
16 edge 53 of shell 27.

17

18 Other detent means, which can be readily manipulated  
19 by one hand without removal of the helmet from the head,  
20 will readily occur to those skilled in the art.

21

22 Attention is now directed to Figure 9, in which is  
23 seen a latch assembly 54 for releasably securing ballistic  
24 shield in the raised position. Chosen for purposes of

1 illustration, as seen in greater detail in Figures 10 and  
2 latch assembly 54 is in the form of a draw bolt  
3 mechanism having a catch 55 secured to outer surface 57 of  
4 shell 27. The other element of the draw bolt assembly,  
5 strike 58, is secured to the outer surface 59 of ballistic  
6 shield 29.

7

8 As particularly illustrated in Figure 9, upper edge 38  
9 of ballistic shield 29 abuts forward edge 53 of shell 27  
10 when in the raised position. Also when in the raised  
11 position, outer surface 59 of shield 29 is substantially  
12 contiguous with outer surface 57 of shell 27.

13

14 It is within the teachings of the instant invention  
15 that shell 27 and ballistic shield 29 be integrally molded  
16 or otherwise formed as a single unit. As such, the shield  
17 is an integral anterior terminal portion of the shell.  
18 After fabrication, the anterior terminal portion is  
19 separated, as by cutting or sawing, to form a forward edge  
20 53 on shell 27 and an upper edge 38 of the ballistic shield  
21 29. Subsequently, shell 27 and ballistic shield 29 are  
22 joined as previously described and illustrated in  
23 connection with Figures 5, 6 and 7. The shell and the  
24 shield are padded and lined in accordance with conventional

1 practice. Detent means and latch means, as previously  
2 illustrated and described, may be incorporated into the  
3 foregoing method of fabrication.

4

5 Various modifications and variations to the  
6 embodiments herein chosen for illustration will readily  
7 occur to those skilled in the art. For example, while the  
8 foregoing disclosure is directed to a protective helmet  
9 that can be optionally used either as a jet-type helmet or  
10 a full-face helmet, the teaching can be practiced to  
11 convert a preexisting jet type helmet into a full-face  
12 helmet. To the extent that such modifications and  
13 variations do not depart spirit of the invention, they are  
14 intended to be included with the scope thereof.

15

16 Having fully described the invention in such clear and  
17 concise terms as to enable those skilled in the art to  
18 understand and practice the same, the invention claimed is: